INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1993	**Park:** Shenandoah NP
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Permit#:
SHEN1993AGOU

Park-assigned Study Id. #:
unknown

Project Title:
Occurence and Severity of Ozone Injury on Sensitive Hardwood Species in Selected Eastern National Parks

Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 1998
Study Start Date: Jan 01, 1991	**Study End Date** Jan 01, 1994

Study Status:
Completed

Activity Type:
Other

Subject/Discipline:
Air Quality

Objectives:

1. Evaluation of ozone sensitive species (black cherry and yellow poplar) within Trend Plots established peripheral to the three existing ozone monitoring stations within the SNP; concomitant 1993 seasonal O3 monitoring data has not yet become available for interactive analysis and determine the O3 symptom relationships between subplots of pole puenable black cherry with those of the three main Trend Plots for use by SHEN personnel in future survey efforts.

Findings and Status:

Ozone concentrations were higher in 1991 than in 1992; data from 1993 is not yet available. Incidence of injury was greater in 1991 than in 1992 on all three species evaluated. Cumulative ozone concentrations were highest at Big Meadows, the highest elevation site, and lowest at Sawmill Run, the lowest elevation site. Most black cherry and white ash trees were symptomatic at Big Meadows, the least at Sawmill Run during all years of evaluation. In 1991, 1992, and 1993, the percents of symptomatic black cherry at Dickey Ridge were 40%, 13%, and 13%, respectively, at Big Meadows, 87%, 75%, and 82%, and at Sawmill Run, 7%, 10%, and 0% black cherry, respectively, were symptomatic. There were 63%, 17%, and 20% symptomatic yellow-poplar at Dickey Ridge in 1991, 1992, and 1993, 7% and 17% at Big Meadows in 1992 and 1993 (insufficient numbers of this species were found in 1991 to establish a Plot), and 67%, 67%, and 67% symptomatic yellow-poplar were observed at Sawmill Run during the three respective years. At Dickey Ridge in 1991 and 1992 (no white ash were evaluated in 1993) there were 43% and 27% symptomatic white ash, respectively; at Big Meadows, 63% and 40%; and at Sawmill Run in 1992 (insufficient numbers of white ash were found in 1991), 37% of the white ash evaluated were symptomatic.; The 1992 sub-study showed that symptom progression occurred throughout the mid to late summer on black cherry. Smaller black cherry sampled within the eight subplots in the 1993 sub-study had similar amounts of foliar symptoms when compared to mature canopy trees within the main Trend Plots.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?
No

Funding provided this reporting year by NPS: 48901	**Funding provided this reporting year by other sources:** 0

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	
Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**
PENN. STATE UNIVERSITY	6842